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OF MARCH 1900

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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XV. APRIL, 1904. No. 4.

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A New Alysiid from Ceylon.

BY WM. H. ASHMEAD, M. A., D. SC.

Mr. E. Ernest Green, the eminent Coccidologist of Ceylon, has recently sent to Dr. L. O. Howard a small collection of parasitic Hymenoptera for names, among which was a new Alysiid, in a genus not yet reported from oriental regions, which is described below.

Genus **ASPILOTA** Förster.

Aspilota ceylonica n. sp.

♂.—Length 1.5 mm.; ovipositor subexserted. Black and shining, impunctate; first segment of abdomen testaceous; palpi yellowish-white; two basal joints of antennæ and the legs honey-yellow, the trochanters, tips of tibiæ and the tarsi yellowish white; flagellum black, pubescent, the first joint a little longer than the second; wings hyaline, the nervures brown.

Type.—Cat. No. 7725, U. S. N. M.

Peradeniya, Ceylon. Described from two specimens bred by Mr. E. E. Green from a Dipterous larva living in decayed fungus.

A New Thanaos from Southern California.

By Fordyce Grinnell, Jr., Palo Alto, Cal.

Thanaos callidus, n. sp.

♀.—Antennæ blackish throughout, with inconspicuous annulations extending to the club; club entirely black. Palpi clothed with long, black hair, intermixed with grayish hairs, the ventral part more gray than the dorsal. Eyes very dark brown or black. Primaries blackish, thickly overlaid by grayish hairs; dark brown towards inner edge. Fringes with long hairs, same color as adjacent parts of wing, 1 mm. wide; a black line extending parallel to the fringe. The discal area is marked by four black crescents, the concave sides facing; the crescents forming a $\{\}$. Midway between these discal markings and the outer edge are two rows of black dashes, crescent-like and forming almost two parallel lines, 1.5 mm. apart. The inner row extends from the costa three-quarters of the way to the inner margin, while the outer extends about half-way. Secondaries dark brown, sprinkled with long, black hairs; a tortuous row of round, lighter spots extends from costa to inner margin, parallel to outer margin. Fringes continuous with those of the primaries. Underside brownish, lighter towards outer margin. Fringes blackish. A row of round whitish spots on secondaries parallel to outer margin.

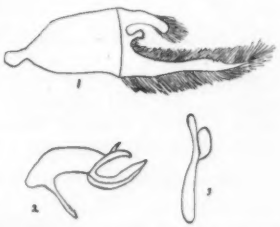
♂.—Differs from the female in having the upper side of primaries blackish, with fewer gray hairs, and these confined to the region of the anal angle, but spreading to the apex. A small white discal spot, and midway between this and outer margin a group of three whitish spots, arranged in a diagonal line and close together; a somewhat large, white spot in the same plane, half-way between costal and inner margin. Secondaries black or very dark brown, a slighter darker shade along the outer margin, otherwise without markings. Underside of primaries brownish, with the same markings as the upper side. The secondaries brownish with a faint indication of three whitish spots in the anal angle. Thorax and abdomen with black hairs, interspersed with grayish ones. Expanse of male and female 30 mm.

Appendages of the male:—The side or clasping organ is large and quadrangular in outline; the cephalic portion tapers more or less abruptly downward and ends in a knob-shaped structure. The thickest portion is in the middle which is marked by a suture. The caudal portion consists of three projections; the lower is longest and tapers to a point, but enlarges in the middle and toward the cephalic part and is clothed with quite long hairs. The upper is about half the length of the lower, is slightly curved and blunt at the extremity, with a few long hairs. The middle projection is short and distinctly knobbed and leans forward into the arch formed by the upper organ. The structure which holds the anal opening is very peculiar in shape; it projects up between the two

side or clasping pieces. It is curved; at the lower end it is tapered and has a long, slender, downwardly projecting piece, notched at the lower end, which probably serves as a prop. The upper part is modified into a clasp, with three peculiar hook or grasping pieces for holding the anus; the lower two are longest and are curved downward and upward forming a cup; the upper piece extends upward and has on its dorsal-cephalic part a small hook, curving cephalad. The structure which holds the penis is also peculiar aud consists of two pieces; one long, slender and funnel-shaped and large at the lower end; and the other broad and leaf-like, joining to the middle of the other piece; a funnel-shaped depression is thus formed for the reception of the penis.

Habitat :—Mt. Wilson, Sierra Madre Mountains, Los Angeles County, Califortia. Altitude, 5886 feet. Discovered June 6, 1903, flying very rapidly around the *Ceonothus* and scrub-oak shrubs on the summit, in the hot sunshine.

Types, four males and one female, to be deposited in the collection of the California Academy of Sciences. The markings of the female are peculiar and characteristic and will serve to distinguish the species at a glance; while the abdominal appendages of the male are peculiar and characteristic in structure.



The figures have been drawn by the author from the appendages of a male mounted in glycerine jelly on a slide, and preserved with the type. Fig 1 represents the side or clasping organ; Fig. 2, the structure which holds the anal opening; Fig. 3, the structure which holds the penis.

THE manuscript of a Catalogue of North American Diptera by Prof. J. M. Aldrich has been accepted for publication by the Smithsonian. The contract has been let for the printing, and he expects proofs almost any time. It will appear in the series called "Smithsonian Miscellaneous Collections," the same which includes both first and second editions of Osten Sacken's catalogue.

There will be about 7000 species of Diptera recorded from North America in the new catalogue, and about 32,000 bibliographical references. It will make at least 750 pages printed. There are about 900 titles in the bibliography, which includes economic and morphological papers.

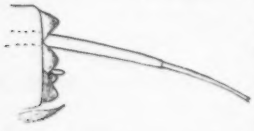
Two Species of Hydroptilidae.

By Nathan Banks.

The following two species of Hydroptilidæ occur commonly around Washington, D. C., and will be included in list of local forms. The form described by Chambers as a Tineid moth under the name of *Clymene ægerifasciella* has been referred to this family; it is, however, I think, a Hydropsychid, and has four spurs on the middle tibiæ, and the hair of wings is not erect.

Orthotrichia americana n. sp.

Head with a dense tuft of snow-white hair between eyes, a broad white median stripe on the thorax, and the anal region of forewings gray-white; so that when the wings are closed there is a median white dorsal stripe the entire length. Antennæ wholly pale whitish; legs pale, unmarked, spurs 0, 3, 4; hind tibiæ with long white fringe behind. Wings acute, anterior pair brown, with some white hairs, mostly forming several white spots near costal margin toward tip. Hind wings narrow, with long pale-gray fringe; hair of abdomen long and appressed. The male shows the long, two-jointed penis, as in the common European species, and a black ventral plate, hid in dense hair. Expanse, 4.8 mm.

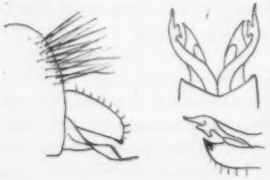


Orthotrichia americana, genitalia.

Many specimens from Washington, D. C., in July and Aug.

Allotrichia maculata n. sp.

Head with tufts of white hair over bases of antennæ and on the vertex; also on the lateral lobes of thorax. Ocelli present. Antennæ pale on basal half, then wide black band, then a narrow white band, then a broad black one, with a narrow white tip. Legs pale, anterior tibiæ and tarsi marked with brown on the outer side; hind tibiæ with long white fringe behind; spurs 0, 3, 4. Wings dark brown, a white spot on costal third, one at pterostigma, a smaller one near the tip, three on posterior margin, one near middle, and one on apical fourth; there are black spots adjoining most of the white ones; and two other black patches, one at tip, and one on posterior margin near tip. Hind wings with gray fringe, black around the tip. Expanse, 5 mm.



Allotrichia maculata, genitalia.

Specimens from Falls Church, Va., in August and September.

The North American Species of Chlorion.

By H. T. Fernald, Ph.D., Amherst, Mass.

A careful study of a large number of specimens of the large blue or greenish sphecid wasp received from all parts of North America, where it occurs, has led to some conclusions which may be of interest.

This insect is labeled under various names in different collections, those most frequently met with being *Chlorion cæruleum* Drury, *C. cæruleum* Linn. and *C. cyaneum* Dahl., which calls for an examination of the synonomy of the species.

Linnaeus in the tenth edition of the Systema Naturæ, I, p. 571 (1758), describes his twenty-second species of *Sphex* as follows: "28. *S. cærulea*, alis ferrugineis basi nigris. *Mus. De. Geer. Habitat in* America *meridionali.* Magnitudo *Crabronis.* Alæ *ferrugineæ, basi nigræ, apice albicantes.* Antennæ *basi nigræ, apice ferrugineæ.*"

This is the first use of the specific name *cærulea* for a *Sphex*. In the twelfth edition of the Systema Naturæ, I, p. 947 (1766), this description is copied word for word for the thirty-eighth (and last) species of *Sphex* given in that work. But on page 941 of this same book, the second species under the genus *Sphex* is also given the name *cærulea* (!), and it is described as follows: "2. *S. cærulea*, alis fuscis. *Amœn. acad.* 6 p. 412. *n.* 90. *Catesb. car.* 3. p. 5. t. 5 ? *sed punctum nullum in alarum apice. Habitat in* America *septentrionali.*"

Comparison of these descriptions with the insect under consideration shows that the one found in the tenth edition cannot apply; indeed, it would seem probable, as Dr. F. Fr. Kohl has stated, that it is the description of some southern *Pepsis*. Hence this description in both editions must be thrown out of consideration. But its presence in the tenth edition of the Systema Naturæ makes the *cærulea* described on page 941 of the twelfth edition a preoccupied name, and we therefore have for this last insect a description but no tenable name. The description in itself might, perhaps, apply to the wasp here treated, but it is too brief and vague to give any certainty, though the reference in it to Catesby suggests a possible way

of learning to what insect Linnæus intended this description should apply. Catesby's figure, however, gives but little assistance. The drawing is smaller than the insect here considered, but I can find no evidence that Catesby's figures have any definite relation to the size of the objects they represent. Still the figure is evidently of a Sphecid, and of one with a petiole longer than the abdomen—a character not true for the present case. So far as any conclusion can be drawn from the figure, it is more suggestive of a *Podium* or *Pelopæus* than of a *Chlorion*. We must therefore conclude that while it is possible that the description on page 941 of the twelfth edition of the Systema Naturæ may be of this insect, the evidence from Catesby's figure does not sustain this, and that in any case the description is without a tenable name.

De Geer (Mem. hist. nat. Ins., III, pp. 585–589, pl. 30, figs. 1 and 6, 1773) recognizes both of the Linnæan *cæruleas*, but remarks of the one given only in the twelfth edition that it is of mediocre size, and as he provides no name to take the place of the preoccupied one his writings afford no assistance.

Drury (Ill. Nat. Hist. Ex. Ins., II, p. 75, pl. 39, fig. 8, 1773) figures what is evidently the insect for which we are seeking a name, and gives a fair description of it. But he calls it *Sphex cærulea* of Linnæus, and refers to page 947 of the twelfth edition—the wrong *cærulea*—plainly an erroneous identification.

Dahlbom (Hym. Eur., I, pp. 22 and 24, 1843) gives two descriptions which need consideration. To one (p. 22) he assigns the name *Chalybion cyaneum*, and to the other (p. 24) the name *Chlorion cyaneum*. Of these, the first can be thrown out as not applicable in the present case, leaving *Chlorion cyaneum* as the first available name to apply to our North American *Chlorion*.

Kohl (Ann. naturh. Hofmus. Wien., V, pp. 186–187, 1890) distinguishes two species among the specimens of this insect accessible to him, naming them *Sphex* (*Chlorion*) *nearcticus* and *S. occultus*. The chief differences between these species are that in *C. nearcticus* there are no punctures on the collar, those on the frons are finer than in *C. occultus*, and the

clypeus in the female is slightly longer than the third segment of the antennal filament. In *C. occultus* the collar, anterior part of the mesonotum and the mesopleura are coarsely punctured, the frons is more coarsely punctured than in the other species, the mesopleura are in part coarsely rugose, as is also the dorsum of the median segment, and the clypeus in the female is shorter than the third segment of the antennal filament.

Examination of a large series of specimens convinces me that these distinctions cannot hold. Nearly all the examples agree in some of the characters named with *C. nearticus*, but in others with *C. occultus*, and in many cases the division between the two is about equal. Apparently *C. nearcticus* and *C. occultus* represent extreme degrees of the variation of a rather variable species, *C. nearcticus* applying to those forms in which the punctures and rugosity are least developed, and *C. occultus* to those in which they are most strongly marked.

Chlorion ærarium Patton (Can. Ent., XI, p. 133, 1879) is, as Patton himself says (Proc. Ent. Soc. Wash., III, p. 46, 1894), a variety of this insect, having a bronze color. The shade of color seems to be connected with the locality from which the insect comes, specimens from New England and the Middle Atlantic States being bronze-blue, those from the States next south and including Kansas being deep blue, but often with a bronze tinge, those from Missouri, Tennessee and farther south deep blue, while examples from Mexico, Arizona and California show transition shades from deep blue through greenish blue to a bright green.

It is interesting to note that this insect has been captured in Massachusetts as far north as the southern side of the Holyoke range of mountains which crosses the Connecticut valley in a northeast-southwest direction, though in Amherst, which extends to the top of this range on its northern side, it has never been taken, nor do I find any record of its capture toward the eastern end of the State.

Arranged in regular form the more important synonomy of this species will stand as follows :

CHLORION CYANEUM Dahl.

? || *Sphex cærulea* Linn., Sys. Nat., 12th ed., I, p. 941, 1766.
? || *Sphex cærulea* De Geer, Mem. Hist. Nat. Ins., III, p. 589, pl. 30, fig. 6, 1773.
|| *Sphex cærulea* Drury, Ill. Nat. Hist. Ex. Ins., II, p. 75, pl. 39, fig. 8, 1773.
? *Sphex cyanea* Fab. Ent. Syst., II, p. 201. 1793.
? *Pepsis cyanea* Fab. Syst. Piez., p. 211, 1822.
Chlorion cyaneum Dahl., Hym. Eur., I, p. 24, 1843.
Chlorion cyaneum Dahl. Hym. Eur., I, p. 435, 1845.
? *Sphex cærulea* Lepeletier, Hist. Nat. Ins. Hym., III, p. 336, 1845.
Chlorion ærarium Patton, Can. Ent., XI, p. 133, 1879.
Sphex (*Chlorion*) *nearcticus* Kohl, Ann. natur. Hofmus. Wien, V, p. 186, 1890.
Sphex (*Chlorion*) *occultus* Kohl, Ann. natur. Hofmus. Wien, V, p. 187, 1890.
Chlorion cæruleum Ashmead, Psyche, VII, p. 65, 1894.

List of Sphingidae, Saturniidae, and Ceratocampidae observed at Raleigh, N. C.

By C. S. Brimley.

I.—SPHINGIDÆ.

Hemaris thysbe Fab.

Common in gardens in summer on flowers of larkspur, petunia and verbena. Dates, 1900, July 13 to August 15, September 12. 1901, June 13 to August 20. 1902, June 25 to August 15.

Hemaris thysbe ruficaudis Kirby.

Common in woods in spring on flowers of bush honeysuckle (*Azalea*), wild pinks (*Phlox*), and on wild plum (*Prunus chicasa*) blossoms. On March 27, 28, and April 1, 1903, was common on a lilac bush in my garden. Other dates were April 11, 18, 27, 1903.

Amphion nessus Cram.

One caught on flowers of yellow jessamine (*Gelsemium*), April 27, 1899.

Deidamia inscriptum Harris.

In June, 1903, I found seven Sphingid larvæ on Virginia creeper, which I took to be *A. myron*; these pupated from June 12 to 18; I left them for a little over three weeks, and then concluding they were all dead, put them up in alcohol. All this time I still looked on them as *myron*; a little while later, on examining them, I was struck by their utter lack of any of the characteristic markings of *myron* pupæ, the head also had several projections not present in *myron* pupæ, and on carefully going over all the descriptions in my possession of Chærocampine larvæ and pupæ, I concluded they were this species.

Deilephila lineata Fab.

This was common in summer of 1899, but dates were not recorded. In 1900 one was taken July 30 and another August 4, both on flowers of jimsonweed (*Datura*). In 1901, one, August 29, on *Datura;* one, September 2, on petunia; others, September 23, 24, 28, 30; October 1, on pink moonvine flowers; one, October 7, on honeysuckle flowers, at 11 A.M. In 1902 one caught in field in morning. Two larvæ brought to us September 10 and 12, 1902, said to have been found on collards.

Theretra tersa L.

1900, September 24; 1901, July 22, 27, August 7, 30, September 9, 11, 13, 28, all but two caught in house,—these July 22, on *Datura*, and August 7, on *Zinnia*. A full-grown larva was brought me September 22, 1902, said to have been found on persimmon.

Pholus vitis L.

September 2, 1901, two larvæ were brought to me, but I could not get them to eat anything, and both died.

Pholus pandorus Hübn.

1900, September 1, in house; June 18, July 10, August 9, in house; September 4, picked up on sidewalk; 1902, July 26, in house; October 2, resting on fence. Larvæ found on grape July 14, August 12, 1901; September 11, 1902. The larvæ

seem very subject to the attacks of Braconid and Tachinid parasites.

Pholus achemon Drury.

A number of larvæ of this specie, *P. pandorus*, and *A. myron* brought us September 11, 1902. From those belonging to this species I bred a number of pupæ, from two of which moths emerged on June 17 and 18, 1903. A specimen was caught in house August 12, 1903.

Ampelophaga myron Cram.

1900, July 22, in house; 1901, August 2, 4, 8, 27, 29, bred from this year's larvæ on Virginia Creeper; 1902, May 15, one bred from 1901 larva; June 24, one resting on geranium flower in daytime; July 10, 23, 26, August 1, 3, bred from same year's larvæ; 1903, June 2 3, bred from 1902 larvæ. Of five larvæ which pupated from August 8 to 17, 1901, the last four on consecutive days, two emerged as moths on August 26 and 29, a third on May 15, 1902, and the other two died. Larvæ may be found here from June to October.

Phlegethontius quinquemaculatus Haworth.

Our commonest Sphingid, though curiously we have found only two larvæ; these found on tomato July 27, 28, 1901, pupated August 1, 3; moths emerged August 23, 26. The moths are very common on jimsonweed flowers at dusk. Dates for 1900, June 15 to 19, July 9 to August 26; 1901, June 11 to 28, July 23 to September 26. Both this species and the next were exceedingly abundant in 1901, and have been much scarcer since.

Phlegethontius sexta Johan.

Nearly as common as the preceding; larvæ very common on tomato, jimsonweed and allied plants. In 1900 eleven larvæ pupated from August 19 to September 2; from seven of these moths emerged on the following dates, June 15, 18, 20, 21, July 11, 28, August 8, 1901. Dates for the moths: 1900, June 14 to 19, July 17 to August 22; 1901, June 11 to 25, July 17 to September 24. The moths are nearly as common on jimsonweed flowers as the preceding, but do not come out

as early in the dusk of the evening. The larvæ are much subject to the attacks of Braconid parasites.

Phlegethontius rustica Fab.

1900, August 15, one on jimsonweed flower; 1901, September 5, one on rose, a larva found in October, 1901, on ash, and another in October, 1902, also on ash; in summer of 1903, three larvæ found on *Chionanthus*, and one on privet; all four succumbed to the attacks of Braconid parasites.

Phlegethontius cingulata Fab.

The larvæ were very common on Japanese morning-glories on my porch during the summer of 1899, but owing to the attacks of Braconid parasites, I succeeded in rearing only one moth. In 1900 moths were taken on jimsonweed flowers July 17, August 14, 16; in 1901, June 14, July 23, 24, 29, 30, August 5, all on jimsonweed; September 6, 23, on pink moonvine; 1902, August 26. The pupæ are often ploughed up in the sweet-potato fields. Two moths emerged in 1903 as late as the first week of October, though I have not the exact date by me, the specimens having passed out of my possession.

Sphinx plebeia Fab.

1900, July 31, Aug. 21; 1901, July 23, all on jimsonweed flowers. Two larvæ found on crossvine (*Bignonia capreolata*) in September, 1901, and another on trumpet vine (*Tecoma*). A moth emerged from one of the first two May 27, 1902.

Dolba hylæus Drury.

1901, August 1, one on jimson weed flower.

Ceratomia amyntor Geyer.

1902, May 26, one bred from larvæ on elm. Have seen the larvæ frequently in the fall on elm, and once on birch in summer (August, 18, 1902).

Ceratomia undulosa Walk.

1899, April 16, 25, bred from pupæ found in winter; 1900, April 28, bred from pupa; July 28, bred from larva found July 7, on *Chionanthus*, pupated next day and emerged twenty days later. In 1901 the larvæ were very common on ash and

Chionanthus during the months of August, September and October. The larvæ pupated from August 30 to the middle of October; next spring the moths emerged from May 7 to July 15.

Ceratomia catalpæ Boisd.

1901, September 11, one picked up dead; two caught in house in previous years. 1903, thirty-one larvæ brought me, said to have been found on a *Catalpa* tree; these were nearly full-grown, and pupated three or four days later.

Smerinthus jamaicensis Drury.

1899, April 21, one bred from pupa; 1903, June 16, 30, two, both bred.

Paonias excæcatus S. and A.

1899, one found, just emerged and resting on a weed, in July; 1901, July 17, one bred from pupa: 1903, June 29. July 11, two, both bred. In the fall of 1902 I had three "*Smerinthus*" larvæ, two with the caudal horn greenish and the lateral stripes nearly meeting on the back, and one with caudal horn bluish and stripes distant dorsally; during the winter I had a pupa brought me, and from these four bred two specimens of this species and two of the preceding. Larvæ of this or the preceding are not infrequently found on willow and also on apple and plum.

Cressonia juglandis S. and A.

I found the larvæ of this on young hickories, mostly under four feet in height, in large numbers in the fall of 1901, and in lesser numbers in 1899 and 1902. June 27, 1900, one bred from larva which had pupated September 30, 1899. May 12, 1901, one caught flying in my garden at dusk. August 14, 1902, one caught in house.

II.—SATURNIIDÆ.

Samia cecropia L.

Not common. I bred one from cocoon found on buttonbush (*Cephalanthus*), the moth emerged June 3, 1900.

Callosamia promethea Drury.

The cocoons of this species were quite common in the fall of

1898, and somewhat less so in 1899; since then I have not seen any. Dates: 1899, May 2, 4, 7, 10, 16, 19, 25, 27, 28, June 4; 1900, May 12, 14, 22, 26, 28, and one in June; all bred from cocoons found during the previous winter. The cocoons were commonest on sassafras, but were also frequently found on tulip poplar, and an occasional one on a number of other species of trees. Newly emerged females attracted the males, sometimes in some numbers, twelve being the largest number in one afternoon, no males came to the females earlier than 4 P.M., nor later than 6 P.M. I bred an *Ophion* from a cocoon May 26, 1900.

Callosamia angulifera Walk.

May 27, 1903, a male picked up in my garden.

Tropæa luna L.

Larvæ very common on sweetgum (*Liquidambar*) in the fall of 1901, much less common in 1902 and 1903. In 1900 I found a larva on sweetgum, on September 29; it spun October 1, and the moth emerged May 4, 1901.

Telea polyphemus Cram.

Very common, the larvæ and cocoons being found most frequently on elm and maple, also occasionally on oak and birch. In 1903 moths emerged from cocoons found in winter, on the following dates: May 10, 11, 14, 15, 16, 18, 20, 21, 23, 26, July 14, 26, 27, 29, 31, August 2, 5, 6, 8; the cocoons were all kept out-of-doors in a rather cool place.

Automeris io Fab.

The larvæ of this species seem most commonly to be found on cotton in this locality and are usually known as the Cotton Stinging Worm. From larvæ taken in the fall of 1902 a number of moths were bred which emerged on the following dates in 1903: June 23, 30, July 3, 7, 10, 11, 15. 22.

III.—CERATOCAMPIDÆ.

Anisota stigma Fab.

A number of larvæ found on oak in the fall of 1902. Moths were bred from these on the following dates in 1903: July 17, 23, 28, August 2, 3, 4, 11.

Anisota senatoria S. and A.

Larvæ often very common on oak. I had about two dozen to bury in the fall of 1902, and did not breed a single moth from the whole lot. I bred a male in August, 1900, from larva taken the previous fall.

Anisota virginiensis Drury.

A female taken at night in the pavilion at Pullen Park, just outside the city limits, in July, 1899.

Anisota rubicunda Fab.

Larvæ often very common on maple. From larvæ taken in fall of 1902 I bred moths on the following dates: June 2, 5, 9, 21, 1903.

Adelocephala bicolor Harris.

Three larvæ brought me October 9, 1901, said to have been found on Honey Locust. Three more in fall of 1902; from the latter one moth, a male, was bred on May 26, 1903.

Citheronia regalis Fab.

The larvæ are quite common on cotton, persimmon, and sweetgum, and are occasionally found on hickory, walnut, and sourwood. From three larvæ which buried on September 26, 27 and 29, two moths were bred, the moths emerging on July 17 and August 3, 1901.

Basilona imperialis Drury.

Larvæ are common on elm, pine, sweetgum, cotton and oak, but not as common as the preceding. From larvæ which pupated in the fall of 1902, moths emerged on the following dates: August 4, 5, 9, 12, 13, all being males.

PROTANDRENÆ IN NEW JERSEY.—Some years ago I examined in the National Museum two males of *Protandrena* from Camden Co., N. J., a surprising locality. They were not reported in Dr. Smith's New Jersey list (2d edition), and seem to have been overlooked. They were like *P. asclepiadis*, but more robust, and I presume that they should be referred to *P. cockerelli* Dunning, described in the female only from Kansas. This is the more likely because the National Museum contains a male from Kansas agreeing with them.—T. D. A. COCKERELL.

Micro-Lepidoptera—Suggestions.

By W. D. Kearfott.

(Continued from p. 96, Vol. xv, No. 3.)

Part II.—Collecting.

The favorite European practice is to bring home the specimens alive, each in a small willow-chip pill box, killing them in the evening or the next morning just before expanding. The chief merit of this system is in the naturally relaxed condition of the moths, but its disadvantages seem to me to far outweigh the advantages, principally in the large bulk and great number of boxes that have to be carried, the danger of the moths flying around in the confined space and losing their scales, and the always possible catastrophe of a stumble or fall by which a goodly number of the fragile boxes will be reduced to splinters.

Of course, the ideal way of obtaining flawless specimens of Micro-Lepidoptera is by breeding, which will be the subject of the next paper; but as many specimens can be taken with a net, that may never be secured in any other way, it is desirable to have the apparatus to fit the smallness of the specimens and to be as simple as possible.

The Net.—The net is the most important part of the outfit; and I have gradually reduced the size of the one I use to only about half the diameter of the common butterfly kind. It is six inches in diameter at the top, and in length twice its diameter or twelve inches (the same ratio should be used for any diameter). I have tried all sorts of patent and folding nets, but they all seem to be weak in some part, and give out when most needed. A frame and stick I have used constantly for over three years was made as follows:

The frame is a piece of three-sixteenths diameter spring brass wire, total length about twenty-four inches, bent in a circle, with two four-inch straight ends, like Fig. 10. The stick is a slender bamboo cane, cut to a length of two feet; both ends should terminate at a joint. In the smaller end, just below the joint, cut a small hole on each side, and below the holes for two or three inches wrap the bamboo with fishing cord to

stiffen it and prevent the holes from becoming cracks. The stick can also be divided in the middle, with a pair of ferrules from an old fishing rod securely fitted to the cut ends; which will make it possible to stow all apparatus away in bag or pockets and avoid the scornful looks and remarks of those who do not entirely appreciate the scientific value of our pursuit.

Fig. 11 shows the jointed stick, with the straight ends of the frame tucked into the holes provided for them, which latter

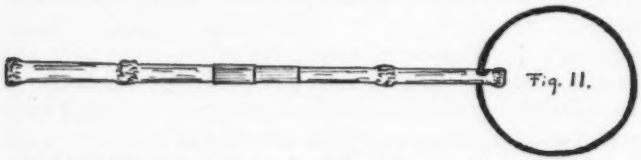


Fig. 11.

explains the reason for selecting bamboo, namely, that it is hollow between the joints, and in addition is very light and strong.

The best and most durable material I have been able to find for net-making is white *mousseline-de-soie*, which can be bought at any drygoods store; it is a very fine mesh silk veiling, and so woven that the threads do not draw apart, as is the case with any material woven gridiron fashion, like common mosquito netting. The net is cut leg-of-mutton shape, and the seams should be sewed down on both sides; at the top should be sewed a piece of two inch wide white silk ribbon, turned over, to make a channel for passing the wire through (Fig. 12). Be sure the small end at the bottom is well rounded, leaving no corners.

Fig. 12.

KILLING.—Ether and chloroform are objectionable from the fact that insects killed by their use usually die with muscles so rigid that it is often difficult to properly set them, and even after taken from the setting board, with wings flat, there is a strong tendency to revert to the position in which they died.

Insects killed with cyanide of potassium, on the contrary, die in a perfectly relaxed condition. I have never used spirits of ammonia, but imagine it would tend to affect the colors, especially greens and pinks.

My cyanide bottles for micros are made of the common "st-tubes which can be purchased in any drug store for a few

cents each. The most satisfactory size is about six inches long by three-quarters of an inch in diameter. It is well to have more than one for fear of accident, and also that too many moths may not be in the same tube at the same time. Three or four can easily be carried in top coat pocket, and when I expect a big day's work I load both top coat and vest pockets.

The cyanide should be crushed into small lumps, about size of buckshot, and put in bottom of tube from one-half to three-quarters of an inch deep; on top of this put a layer of sawdust one-quarter to one-half inch thick, and on top of the sawdust pour a teaspoonful of liquid plaster-of-paris. The chemical action caused by the contact of the sawdust and cyanide very much increases the strength of the latter. Leave open for a couple of hours and then push a small piece of absorbent cotton in the tube, shoving it down as flat as possible against the plaster. This will prevent the moths from sliding around over the smooth surface of the plaster and rubbing off their scales. Fig. 13 shows a test-tube properly charged, and it is surprising, considering the very small amount of cyanide, how long its strength continues at full power. I have some that are still as good as new that were made two and three years ago. Their length and slightly flared mouth make it particularly easy to manipulate them inside the net. But they are much more fragile than the ordinary bottle or jar, and the greatest care should be used, in case of an accidental break, to dig a little hole and bury all the fragments in the earth. If a finger is cut by the sharp edge of the broken glass, get it immediately into water, rubbing vigorously to get all the poison out of the wound.

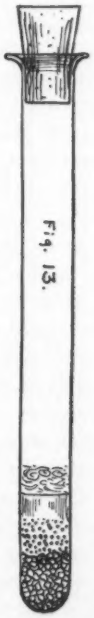


Fig. 13.

COLLECTING BOX.—The best boxes are made of thin sheet zinc, which does not rust like common tin, nor verdigris like brass. My boxes are oval in shape, and are cork-lined inside on both bottom and top.

Two sizes are convenient to have, the smaller about 5 by 3

inches and the larger about 7 by 4 inches. Either can be carried in a side coat-pocket. I also use these same boxes all winter for relaxing dried specimens; a teaspoonful of water is sufficient, and for very small Tineids and Tortricids four to six hours will make them just as soft as they were when first killed; much longer than this will make them wet, and once wet it is impossible to do anything with them. A longer time, say twelve hours, for the large, robust-bodied Tortricids and medium-sized Pyralids, and the large specimens of the latter family can remain twenty-four hours in the relaxing box without coming to harm. While on the subject of relaxing, it might be well to observe that it is very advantageous to use two boxes at the same time. The largest we can call the storage box, which must be kept tightly closed all the time except when opened quickly to transfer half a dozen to a dozen insect specimens into a smaller box; from the latter they are to be taken one by one for setting. If only one box is used, and fifty or more specimens are under way, the constant opening and releasing the moist air will cause a good many of the last specimens to become too dry to work with. For this same reason, pick out and spread those with the smallest bodies first. I do very little setting in the summer time, simply pinning the specimens when fresh and storing them away until winter, and find no difficulty at all in getting the moths as perfectly spread as if this work had been done when they were freshly killed. But if the time is available, and it is preferred to set the specimens as soon as possible after they are caught, it will then be well to sprinkle a little water on the cork of the box while out in the field or woods, so the moths will not dry too much before getting home.

The brown canvas or khaki cartridge bags, sold in gun and sporting-goods stores, with a leather shoulder-strap, are very convenient and of light weight for carrying such of the apparatus as the pockets will not hold; they are made in several sizes, and range in price from sixty cents to one dollar and a half.

The above apparatus, with a supply of pins, forceps (Fig. 2) and a short stick or two of elder pith are all that are needed

for collecting the perfect insects. Skill with the net is easily acquired, and slipping the cyanide tube into the net and securing the moth requires no particular explanation, a half-day's work will result in both operations becoming very easy. But bear in mind that more than two or three specimens in each tube will probably cause all to lose much of their freshness. When this number is in each tube, sit down on a log, rock or fence-rail, with back to the wind, open collecting box and place on knees, then gently tilt one tube so that the moths drop into the upturned top of box; with forceps lift up and pin as described on pages 90 and 91, sticking the pinned specimens in the bottom of the box. If any of the moths stick to the cotton in tube, either shake it gently or use the fine-pointed forceps. It is not well to empty the moths from all of the tubes into top of box before beginning to pin, for fear of the moths coming in contact, wind blowing them around, or the fence-rail breaking; expose just as few at a time as possible, and remember that a day's work which consists of only a dozen perfect and flawless specimens is of far more real value than one in which two hundred are brought home in any old condition.

While Micro-Lepidoptera can be taken every hour of the twenty-four and almost every day of the year, there are, of course, times and places more favorable than others, and a reference to some of these and the general habits may be of interest.

Pyralids are easily disturbed in the daytime, when walking through the undergrowth of thickets and light woods, and while the flight of some species is swift, the majority do not fly more than twenty feet before seeking a new place of rest, which is almost invariably on the *under side* of a leaf; to catch them, the eye must be kept on the leaf, and after approaching it quietly drop the net almost to the ground, and with a quick upward sweep and a turn of the wrist, the game will usually be found inside.

Tortricids are as a rule even slower flyers than the pyralids, and unless a wind is blowing to assist them, will rarely fly more than five or six feet; they are as easily disturbed as the

Pyralids in the daytime; but, while smaller, they are easier to see, as they usually alight on the *upper side* of a leaf.

The majority of Tineids keep themselves well hidden during the daylight hours, and only come out for their natural flight about the time the sun goes down; and a good day's work can be done during this twilight hour, for a half hour before sunset until too dark to see. Back of my home, in the Orange Mountains, in a favorable spot in the open woods, surrounded by low shrubbery and weeds, I have often caught one hundred and more Tineids during this hour, without moving half a dozen steps from one spot. This time of day also seems to be the time of natural flight of a good many species of Tortricids, especially the earliest warm spring days in March and April, and the Indian Summer days late in the fall, November and December. Many species of Tortricids can be taken in abundance at these seasons that were before rare and almost unknown. On March 14th last year I spent an afternoon in the woods, and only caught three or four specimens up to five o'clock, but from then until dark I secured several dozen. November 3d I started collecting at ten in the morning and at four-thirty in the afternoon had perhaps two dozen well-earned specimens; but then the flight began, and until it was too dark to see I caught them just as fast as I could bottle them, more than one hundred specimens, and all very good ones.

The trunks of trees should be carefully examined in the daytime; many a good Tineid or Tortricid will be found in the crevices of the bark, and the bottle can be employed directly on the moth, without the use of the net.

Light in an open window or the electric lights in front of stores are also very attractive to nearly all moths. Sugaring does not produce satisfactory results with the micros. I cannot urge too strongly the more general use of a Moth Trap by all collectors who are located in the country or suburbs, where it can be placed so that the light shines over a patch of weeds or an overgrown thicket, and where it will be safe from boys who think it a joke to break the glass; as it works while we sleep. The trap I have had the most success with is an adaptation of one described in vol. vi of the Bulletin of the Brook-

lyn Entomological Society (1883), and a cross-section is shown at Fig. 14, and an outside view at Fig. 15. The dimensions are about forty inches long, of which ten inches are the lamp compartment: the wide flaring mouth or open end is about eighteen inches square; the width at the other end tapers to nine inches; and on the back of the lamp compartment is a hinged door. The whole frame of the trap is made of one inch thick poplar, except the top of the lamp space, which is better of tin to avoid danger of fire. A hole on top, with a bottomless tomato can for a chimney, will prevent the wind from blowing out the lamp. The oblique lines in the sectional view are sheets of glass, the outer and inner beginning at the bottom and reaching to within one inch of the top, the middle sheet starting at the top but not reaching the bottom by one inch. Of course, a fourth pane of glass separates the lamp from the trap proper. On the floor of the inner compartment, just in front of the lamp space, is a circular hole for the insertion of the cyanide jar.

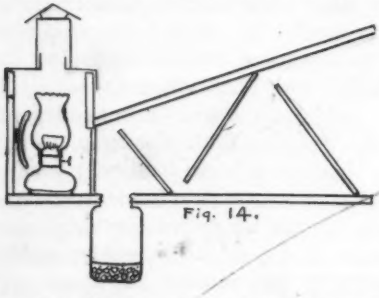


Fig. 14.

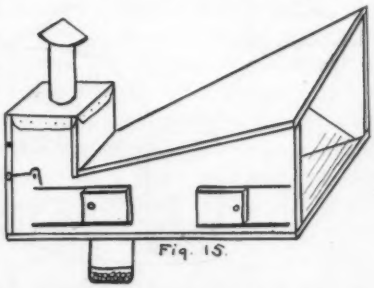


Fig. 15.

This should be a one- or two-quart Mason fruit jar with screw-top. The most convenient way to use the jar is to have two screw-caps, one of which has the entire top cut out, leaving only the screw-ring; this ring should be permanently fastened in the hole made for it in the bottom of the trap; a good joint can be made by tacking a lid of a cigar-box on one side of the hole; then lay the ring (with big end down) on the

cigar-box lid, and carefully pour plaster of paris around it until all the space is filled; after the plaster hardens, the cigar-box lid can be pulled off and thrown away.

Then, just before dark, remove the solid cap from the jar—which should be tightly stoppered all day to regain its strength—and screw it up into place and, after lighting the lamp and watching it awhile to see that it does not smoke, it is ready to work all night. With this trap, in my home locality, I usually caught from fifty to three hundred specimens each night, from April to November, of which seventy-five per cent. were Tortricids and Tineids.

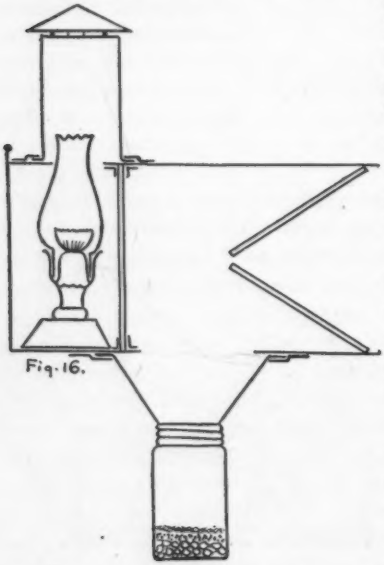


Fig. 16.

Beetles do not seem to be particularly attracted, which is very fortunate, as an able-bodied specimen would work havoc before he succumbed.

I neglected to say that all of the inside of the trap should be painted with several coats of good white paint, and a silvered-glass reflector put on the door back of the lamp; both add to the glare and attractiveness. For protection the outside should be painted dark green.

A very much smaller and simpler trap is shown in section at Fig. 16. But it will require the services of a tinsmith, as it is nearly entirely made of that material. This is the design perfected by my good friends in West Brighton, Pa., F. A. and Harry D. Merrick, and to them I am indebted for the sketch and the following description. The total length is fifteen inches, by eight inches wide and eight inches from top to

bottom. The lamp compartment is four inches long. The chimney and top of lamp compartment are made to slide into place, and the same arrangement is provided for the funnel-shaped piece at the bottom, into the small end of which a Mason fruit-jar screw-top, with the centre cut out, is soldered.

These slots or slides are shown in the sectional drawing by what look like detached pieces, but of course they are soldered or rivetted to the body of the trap.

The entire back of the trap is a door working in grooves, and can be entirely removed at the top. The hole in the top for the lamp chimney is placed over the front end of the lamp space, so that the lamp can be easily removed by tilting. There are only three sheets of glass, all of them 7¾ inches square. The two front ones are arranged as shown, and come to within half an inch of each other in the middle. They, as well as the sheet of glass in front of the lamp, are held by grooves made by turning up the edge of a strip of tin. The The great advantage of this form of trap is that it is easily portable, as the projecting pieces, top and bottom, the glasses and the lamp can all be removed, and the whole apparatus packed in a telescope travelling bag sixteen inches long by eight inches square. One-pint jars are amply large for this trap. It should also be painted white inside and green outside. Last year the Merricks started one trap about the middle of June and a second one early in August; this season they have four ready awaiting the first mild night. The great advantage that must not be lost sight of is that they "work while we sleep."

The large jars for traps should be made with a layer of cyanide lumps as large as a chestnut, about one inch deep on the bottom, over this another inch of damp sawdust, with sufficient plaster-of-paris to hold all in place.

This will make a very powerful jar, killing almost instantly, but it is also liable to become very wet after having been in use a short time, therefore pieces of blotting paper, cut exactly the diameter of the inside of jar, should be put in from time to time to absorb the excess moisture, and the layer of raw cotton on top of the plaster may have to be renewed every two or three days, to prevent soiling the insects.

After sending the copy of the first part of these Suggestions to the Editors, I received from the American Entomological Company a sample card of American-made steel, black japanned, needle-pointed pins, which are far superior in finish, stiffness and springiness to any European-made pin I have ever seen. No. 00 is a trifle less in diameter than the No. 1 Kirby, which latter is about the thickness of No. 0. I can heartily endorse these new pins; the best grade are to be known as "No. 210 Special double japanned." The only criticism to be made is that the heads are a separate piece; but this may be remedied if we all bring pressure to bear on the makers and insist on a head that cannot come off.

(To be continued).

NOTE ON DURATION OF LARVAL STAGE OF ODONATA.—During the late summer of 1902 the water in Green's rock quarry dried completely up, and remained so for at least two months. Unfortunately, I did not notice the dates when the pool dried and when it filled up again. On July 22 and August 10, 1903, I found in the quarry exuviæ of recently transformed *Anax junius*; on September 5, 1903, of *Tramea carolina;* on August 10, of *Lestes forcipatus;* on August 10 and 18, of *Pachydiplax longipennis;* thus apparently showing that these four species had in this case completed their transformations in less than six months. The quarry had not any water in it in the previous fall before late November at the earliest; thus the eggs of these species must have apparently been deposited in the spring of 1903.—C. S. BRIMLEY, Raleigh, N. C.

INTERNAL PARASITES OF THE DUCK.—The writer spent the summer of 1903 upon a farm in the northwestern part of Connecticut. In the latter part of July it was noticed that a large Pekin drake began to look emaciated and sickly. All efforts to bring it back to health failed, and a week or so later it died. Postmortem examination revealed a large number of maggots feeding upon the flesh in the posterior part of the abdomen. Apparently the adult flies had deposited their eggs in or near the anus of the drake, and upon emerging the young larvæ had worked their way into the surrounding flesh. A number of the maggots were allowed to complete their life-history in confinement. This was accomplished in about two weeks. Some of the adult flies were identified by Mr. D. W. Coquillett, of the United States National Museum at Washington, who found that there were two species belonging to different genera, *Phormia regina* Meigen and *Lucilia cæsar* Linne. By far the greater number were of the former species. No differences were noticed in the larvæ; but this is not strange, as little attention was given to them until the imagos had emerged.

I can find no record of similar parasitism of birds.—A. VINCENT OSMUN, Amherst, Mass.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., APRIL, 1904.

Convocation week of the American Association for the Advancement of Science will be held in Philadelphia during December, 1904, and January, 1905, and at that time the Association of Economic Entomologists and the Entomological Club of the A. A. A. S. will meet in the same city. We hope that the Entomological meetings will be a great success and largely attended. Philadelphia may be called the cradle of Entomology in America, and there is much here that should interest visiting entomologists. There is no doubt but that the Entomological Section of the Academy of Natural Sciences, the American Entomological Society and the Feldman Collecting Social will do all in their power to entertain visiting entomologists. It may be early to mention these facts, but we do so that all desiring to come can arrange their plans in advance.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

MR. PHILIP LAURENT is at Gulf Hammock, Levy Co., Florida.

MR. W. D. KEARFOTT, Mr. Erich Daecke and Dr. Henry Skinner contemplate an expedition into the wilds of the Great Notch, northern New Jersey.

THE American Entomological Company has placed on the market a new make of pins, both bright and Japanned. They appear to be an excellent article.

MR. JOHN M. GEDDES, of Williamsport, Pa., is at Stuart, Dade Co., Florida.

PROF. A. J. SNYDER, of Belvidere, Illinois, contemplates a collecting trip to Utah, Idaho and Oregon this summer. He may decide to reside in Oregon permanently.

ON PAGE 78 of the February number of ENT. NEWS the item about *C. eubule* strikes me.

This butterfly has been seen and collected in Nonquitt, Mass , for several years. I noted it first in 1898 and took several specimens, as did Miss Eliot. My record of its presence was published in Psyche, December, 1898. We have seen the butterflies there in succeeding years, but I believe Miss Eliot did not see them last year—an exceptionally poor year for moths and butterflies. It is evidently established there, for the butterflies have been too fresh to have flown far or long.—CAROLINE G. SOULE.

DUPLICATION OF SPECIFIC NAMES.—A glance at any catalogue will reveal the fact that many specific names have become exceedingly common. Isn't it desirable to avoid this? Dr. P. P. Calvert makes it a point to propose no new specific name twice in his specialty—the Odonata. This is believed to be a good plan. In large orders such a course would make the selection of names a difficult task indeed ; but in the case of the large Orders one could modify the rule to cover only superfamilies.

Let us not duplicate a specific name in an Order if the Order is small, and let us not duplicate a specific name in a Superfamily of the large Orders.—HENRY L. VIERECK.

IN REPLY to Prof. P. Jerome Schmitt's inquiry regarding my experience with *Galerita* taken on Stone Island, Fla., I would state that I took colonies of *Galerita bicolor* mingling with *Brachynus alternans* and *Chlænius erythropus*, in and under decayed pine logs. So far as I can remember, they all bombarded. Many of them, when first disturbed, and again when picked up, would repeat the same performance, the report being quite loud, and the discharge very acrid, leaving a painful burn and a deep-brown stain on the fingers, which would take several days to wear off.—D. M. CASTLE, 2007 Arch St., Philadelphia, Pa.

Doings of Societies.

A regular meeting of the Entomological Section of the Chicago Academy of Sciences was held Thursday evening, February 18th, at the John Crerar Library. Eight members and one visitor present. Election resulted as follows: *Chairman*, W. E. Longley; *Recorder*, A. Kwiat; *Executive Committee*, John L. Healy, Wm. J. Gerhard, A. Kwiat; *Honorary Curator*, A. B. Wolcott.

Mr. Longley reported on the work of the Section during

1903, adding a summary of the more important entomological work done by others.

A discussion of the species of Rhopalocera occurring in the Chicago area followed. This will probably be resumed when time and occasion permits.

Two boxes of butterflies from South America, which our visitor, Mr. Block, exhibited, were also discussed and partly identified by the aid of the Biologia-Centrali Americana.

Adjourned 9.45 P.M. A. KWIAT, *Recorder.*

The meeting of the Feldman Collecting Social was held on February 17th, at the residence of Mr. H. W. Wenzel. 1523 So. 13th Street, Philadelphia. Eight members were present.

Dr. Skinner referred to a recent article on protective coloration in moths, in which it was suggested that the hind wings of *Catocala* were a protection against birds in consequence of their bright color, a theory which the speaker could not support. He pointed out that *Catocala* seldom fly, except at night, their hind wings being therefore concealed at a time when birds are on the search for prey.

The members discussed the capture of Coleoptera by traps.

WM. J. FOX, *Secretary.*

A meeting of the American Entomological Society was held February 25th. Dr. Calvert, President, in the chair. Seventeen persons were present.

Mr. Rehn exhibited *Chorisonura*, a genus of roaches represented by a new species from the coast of South Carolina. He had also received *Ischnoptera johnsoni* from Virginia.

Dr. Calvert exhibited in Riker mounts the Coleoptera he used in class work in the University of Pennsylvania. They were arranged to show several families and their characteristics in each box. He then made remarks on the more recent classification of the Order and quoted from various authors on the subject. The same speaker also exhibited under the microscope specimens showing the development of the wing in the larval stages of the potato beetle.

Mr. Wenzel said the proposed classification as given by Dr.

Calvert differed radically from that of LeConte and Horn, and would require much study before an intelligent opinion could be passed on it. HENRY SKINNER, *Secretary*.

Minutes of meetings of Brooklyn Entomological Society, Brooklyn, N. Y.

May 8, 1902.—Twenty-four persons present. Prof. John B. Smith in the chair.

Mr. Gustav Beyer exhibited a fine series of Coleoptera taken by him in Southern California, embracing *Acanthoderes*, *Mallodon*, *Trichodesma*, *Acmæodera*, *Hololepta* and *Brenthus*, the majority of which he had bred from larvæ as described in the minutes of the last meeting.

Prof. Smith exhibited small elm twigs showing borings made by the larvæ of *Anthaxia viridicornis* and *Neoclytus erythrocephalus*, collected after the severe sleet storm in the latter part of the winter, and stated that many specimens of these beetles had thus been obtained, with some half dozen others, including *Saperda tridentata*. He recommended this method as productive of excellent results.

Mr. Ernest Shoemaker exhibited his large water-color painting of Lepidoptera, containing drawings of sixty-five specially selected and rare native and exotic species. The labor connected therewith had occupied him about 1600 hours during the past five years, and he gave some data as to the special work upon certain specimens. Mr. Shoemaker's production was greatly admired, not only for the beauty and arrangement of the insects, but also for its accuracy.

June 5, 1902.—Twenty-one persons present. Professor John B. Smith, president, in the chair. A committee of three was appointed to consider the question of reprinting or revising "Explanation of Terms used in Entomology."

Mr. Weeks spoke on the subject of "Duration in Pupal Stage by Hibernation and Æstivation," and among other examples cited that of a pupa of *Acronycta americana*, which he had found under a decayed board on Long Island in the spring of 1901 (pupation had undoubtedly occurred in the fall of 1900), and which at the date of the meeting was still in a pupal condition and alive. (The moth emerged on June 8,

1902.) This pupa had been kept in an extension with southern exposure, which during the summer became excessively warm, while the pupa itself, though not entirely deprived of moisture, had many times been neglected for considerable periods. Mr. Weeks added that after "sugaring" assiduously for several consecutive years, he had observed that many noctuids were very irregular as to numbers from one year to another. In certain years a species would almost disappear, while in others it would occur in abundance. Although these irregularities might in many cases be ascribed to stress of weather, parasitism, etc., there was much to be explained as to the factors which control emergence, that it may be not only as simultaneous as possible, but should also occur when a suitable temperature prevails.

Mr. Wasmuth gave instances of a *T. polyphemus* which passed over a year, and of a *C. regalis* two years, in a pupal condition. In the latter case the yellow maculation was transformed to a brilliant orange. His *Ceratomia amyntor* did not emerge from the pupæ this year.

Mr. Franck added that many of his Sphingidæ often greatly retarded their appearance.

Prof. Smith mentioned that nut weevils frequently passed two or three years as pupæ.

Dr. Call reported that although there were hundreds of the exuviæ of the seventeen-year locust in Prospect Park this year, he had only obtained three imagos, and attributed their scarcity to the English sparrow, which eagerly devoured them.

It having been stated that Dr. W. S. Barnes had been unable to find any traces of *Sphinx elsa* in Arizona, Mr. Doll replied that cattle cropped the herbage so closely as to practically destroy the food-plant, and thus cause the disappearance of the insect over wide areas. It could still be found locally.

Mr. W. Grosbeck, of Patterson, exhibited a large series of crayon drawings of caterpillars, moths, etc.

October 2, 1902.—Fourteen persons present. The librarian presided in the absence of the president and vice-president. Mr. Louis H. Joutel, of Manhattan, New York City, was elected a member.

Reports of collecting experiences during the past season

were given by various members. Mr. Martin had collected in Germany and taken many Lepidoptera and Coleoptera; Mr. Engelhardt, at Hudson, N. Y., Hymenoptera; Mr. Franck, at Beaver Brook, Sullivan Co., N. Y., where he had tested a new lamp and taken many specimens; Mr. Richardson, on Staten Island and at Cape Cod. In both localities he had found *Sphecius speciosus* very numerous, had observed its habits and taken many specimens. He also observed a species of *Sphex* alight upon a spider's web and feign to be crippled and exhausted. When the spider approached to inspect her supposed prey the wasp pounced upon her. Mr. Weeks related a similar incident which he had seen. Mr. Schaeffer reported the capture of *Monedula carolina* on Staten Island. This insect occurs frequently in the South but rarely here. Mr. Barber visited Cold Spring Harbor, L. I., and spent three months at Mount Katahdin, where he took some Elateridæ and Buprestidæ, but few Lepidoptera on account of the wet and cold. Mr. Doll, in the Catskill and Adirondack Mountains. Among the Coleoptera taken in the Catskiil Mountains were *Saperda calcarata*, var. *adspersa*. Of Lepidoptera, three specimens of *P. leonardus*. Mr. Watson, at Jamesburg, in August, reported the occurrence of this butterfly there in numbers. Mr. Goeben, at Callicoon, Sullivan Co., N. Y., and Mr. Pearsall, in Ulster Co., N. Y., found collecting rather meagre. Mr. Weeks, at Brooklyn, reported that he had sugared continuously throughout the season and made short trips to the suburbs. He had taken many specimens of all orders. *Catocala* were comparatively rare, due probably to the severe sleet storm in the latter part of the winter, which had dislodged and destroyed the ova.

ARCHIBALD C. WEEKS, *Secretary*.

Dr. Hans Herman Behr.

Dr. Hans Herman Behr, physician, scientist, author, poet, humorist and savant, is no more, and the world of science and letters must mourn the departure of one of its brightest lights. He died Monday, March 6, at 11 o'clock, at his residence,

1215 Bush Street, in the presence of friends of nearly half a century's standing. His life work was finished and at the ripe age of 86 he has passed away, leaving to posterity all the results of the scientific research into which his master mind had delved.

In San Francisco Dr. Behr has been most generally known as the Vice-President and Curator of the Academy of Sciences, that excellent institution which owes so much to his efforts. In the scientific world, however, he was reckoned among mental giants, for in many branches of science, particularly that of entomology, he was an authority of world-wide prominence.

He was born August 18, 1818, in Coethen, the capital and residence of the Duke of Anhalt-Coethen. He received a classical education at the Prince's College, in Zerbst, and at the gymnasium of his native city, passing thence to the universities of Halle and Wuerzburg, where he studied medicine and natural science. He was graduated as a doctor of medicine from Berlin University on March 23, 1843.

As long ago as the time of his graduation he displayed a passion for research in the field of entomology, and at the urging of Alexander von Humboldt and other distinguished scientists, who were his intimate friends, he began the wonderful travels which led him eventually all over the known globe and over a good part of that portion which is even yet practically unknown. He visited Australia, Java and Brazil, and lived two years in the Philippines. His work was ever at the front. The miasmas of swamps, the bites of the deadliest reptiles, the attacks of the fiercest of wild beasts, were all braved by the intrepid naturalist, who deemed life itself but a small matter compared with the securing of some specimen of insect existence hitherto unknown to science. He returned to Berlin, and there practiced medicine, but the fever of research was too strong, and he again went out into the wilds. He penetrated the most remote spots in the East Indies, still collecting, and then, in 1853, he came to San Francisco. Here he decided to settle, and here he wrote the books which have brought him fame and will remain as a monument to his energy for all time.

Since 1864 he has been a Vice-President of the Academy of Sciences, to which institution he presented his wonderful collection of insects.

While Dr. Behr was the recipient of many honors from different institutes of learning all over the world, the most notable tribute to his attainments was given by his alma mater, the Frederick William University of Berlin, upon the occasion of his eightieth birthday. The honorary degree of doctor "Honoris Causa," was then bestowed upon him, a distinction never before given to a German-American. The presentation of the diploma was made the occasion of a magnificent function in Beethoven Hall, on August 18, 1898, prominent citizens of all walks of life uniting to do him honor and telegraphic congratulations being recived from all parts of the world.

Apart from his numerous works on scientific matters, Dr. Behr was the author of several volumes of prose and poetry. A story of adventure in the Philippines had a large sale in Germany, and some of his poems were published in the leading magazines of his native land. Another book by him is now in the press.

Nor was the late savant a philosopher of the "dry-as-dust" variety. He was a valued member of the Bohemian Club and he could hold his own with the best of the raconteurs. He had a keen, incisive, but always kindly, wit. His knowledge of men and affairs, together with the vast knowledge he had gained in far countries and strange places, made him the most companionable of men, and his loss will be felt with particular keenness by the more intimate of his associates.

Arrangements for the funeral have not yet been completed, but as the deceased was a Catholic, the funeral ceremonies will be conducted under the rites of that church.

—*San Francisco Chronicle.*

Strecker's Cat., 1878, III, gives sixteen titles of articles on American insects by Dr. Behr. In later years he has published in "Zoe" and other magazines. A number of our butterflies were made known to science by Dr. Behr, particularly *Neophasia terlooti*.—Eds.

EXCHANGES.

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☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted.—Cocoons of *A. luna, S. cynthia, Att promethea, Att. Gloveri, Att. cecropia, Hyper Io,* and *Eacles imperialis.* Will pay cash for a few of each.—Dr. Tillotson, 744 Clinton ave., Rochester, N. Y.

Oortynas wanted.—Good prices or exchange will be given for fine specimens of *albilunata, erepta, u-album, juvenilis, medialis, senilislatia, cerina, speciosissima, verona, frigida, unimoda, angelica, insulidens, furcata, sauzælitæ, buffaloensis.*—H. H. Lyman, 384 St. Paul St., Montreal.

Wanted.—Perfect colored sketches of American caterpillars (larger Sphinges and night-flies), also broken specimens of exotic macros. Correspondence solicited.—C. V. Blackburn, 101 Pine St., Woburn, Mass.

North American Lepidoptera for exchange.—Also live cocoons and pupæ, Catocalas preferred.—Herman J. Erb, 536 Blum Place, Union Hill, N. J.

Lepidoptera of all kinds wanted for exchange of other specimens. Send list to Chas. Krueger, 1161 N. Lincoln St., Chicago, Ill.

Cicindelidæ wanted.—Cash or exchange for other insects.—Charles Stevenson, 906 St. Urbain St., Montreal, Canada.

Lepidoptera wanted.—*Chrysophanus hypophleas* and vars., from all parts of North America. Also *Arg. atlantis* and *electa,* and many common Noctuidæ, including *Cosmia paleacea.*—E. H. Woolley Dod, Millarsville, Alberta, N. W. T., Canada.

Lepidoptera.—I have 200 *cecropia,* 100 *polyphemus* and 400 *cynthia* cocoons to exchange for other North American Lepidotpera.—Ferdinand Goeben, 464 Atlantic Ave., Brooklyn, N. Y.

Wanted.—Tortricids and Micro-Lepidoptera, especially from the West. Will pay cash and furnish pins, mailing boxes and full instructions.—W. D. Kearfott, 114 Liberty St., New York, N. Y.

Lepidoptera.—For exchange, fertile eggs of *Hemileuca maia*—Alfred C. Sampson, Sharon, Mass.

Exchange.—Would like to exchange Coleoptera from Austria for N. American. Correspondence German and French.—Otto Spicack, K. K. Postbeamtor, Sternberg, Mähren, Austria

Illinois, Lake Superior, Texas and Californian Dytiscidæ wanted in exchange for Dytiscidæ and other Coleoptera.—John D. Sherman, Jr., 390 Halsey St., Brooklyn, N. Y. City.

Wanted.—In exchange or for cash various species and varieties of the genus *Eubaphe* (*Crocota*). Other Lepidoptera also desired, especially mounted specimens. Send lists to A. Kwiat, 701 Larrabee St., Chicago, Ill.

Polistes.—I wish to correspond with entomologists all over the country who are willing to aid me in the study of this genus.—S. Arthur Johnson, Fort Collins, Colo.

Wanted.—Bulletin Brooklyn Entomological Society, vol. i, No. 10, or the complete volume.—Wm. J. Fox, care of News.

Will exchange North American Lepidoptera for native, Exotic or European species. Send lists to Jos. H. Reading, 775 North Rockwell Street, Chicago, Illinois.

A full line of Arizona Coleoptera. Apply to agent, Mr. Chas. Palm, 172 East 64th Street, New York; Dr. R. E. Kunzé, Phœnix, Arizona, U. S. A.

Moths of Pennsylvania and New Jersey. The undersigned will give good exchange in cash or specimens for moths of Pennsylvania and New Jersey that are new to his collection. Send list of rare species only. Philip Laurent, 31 East Mt. Airy Ave., Philadelphia, Pa.

Native pupae for exchange, including *regalis*, *ceanothi*, *luna*, *calleta*. Native pupæ desired. W. T. Buxton, 17 Walter Street, Somerville, Massachusetts.

Lepidoptera. I have a few *luna* cocoons to exchange for *ceanothi* or pupæ of *Papilios* not found in this locality.—Miss Kate W. Strong, Setauket, Long Island, New York.

I have a few live pupæ of *Deidamia inscriptum* to exchange. I wish live pupæ of *Darapsa versicolor* and *Calasymbolus astylus*.—R. R. Rowley, Louisiana, Mo.

Megachilidae of the Americas wanted for study. Will exchange or purchase.—E. S. G. Titus, Div Entom. Dept. Agric., Washington, D. C.

Wanted.—Copies of ENT NEWS for January, 1903, Vol. xiv, No. 1.—Henry Skinner, 1900 Race St., Philadelphia, Penna

Lepidoptera.—*Papilio gundlachianus* for exchange.—Captain Wirt Robinson, Fort Caswell, North Carolina.

Wanted for Cash—Living cocoons or pupæ of Lepidoptera of U. S. A. W. T. Page, 6 Rylett Crescent, Shepherd's Bush, London, W., England.

Lepidoptera to exchange for specimens not yet in my collection. Send lists to Adolph Fischer, 502 School Street, Chicago, Ill.

Exchange.—Coleoptera in papers, with data. Will collect in this locality this season. Send lists.—Rev. J. C. Warren, Elma, Iowa.

Have for exchange.—Named species of Coleoptera, named and unnamed species Lepidoptera, Hymenoptera. Diptera, Neuroptera and Odonata of this locality, for named species of U. S. and Canada.—A.W. Andrews, 180 Helen Ave., Detroit, Mich.

Wanted.—Material for the study of the hybrid or polymorphic butterflies of the genus *Basilarchia*, including larvæ or pupæ of *arthemis* or *astyanax*, imagos of *proserpina* or *arthechippus*, or any specimens showing unusual characters. Liberal exchange. Specimens retained will be deposited in Museum of Comparative Zoology.—W. L. W. Field, Milton, Mass.

Cicindela wanted (Henshaw Numbers 19 to 32b inclusive), Coleoptera for exchange. Will collect in all Orders. Write before collecting.—V. E. Shelford, Zoology Building, Univ. of Chicago, Chicago, Ill.

Butterflies.—Will collect in this vicinity the coming season in exchange for named specimens in papers or expanded, found in other localities.—C. E. Montgomery, 10 Cabot St, Portsmouth, N. H.

Wanted—Insect galls and host plants for the study of distribution. Will exchange specimens.—Mel T. Cook, Greencastle, Ind.

Wanted.—Fertile eggs of *Citheronia regalis* and *Basilana imperialis*. Will pay cash for twenty-four of each.—Phineas Whiting, 106 Fairmount St., Lowell, Mass.

Fertile ova of *Attacus yama-mai*, *Rhodia fugax*, *Calligula japonica* and *cecropia-ceanothi* hybrids for good exchange; will give cash or exchange for pupæ of *angulifera* and *ova* of *H. nevadensis*.—Jas. Mitchell, 212 Indiana Trust Building, Indianapolis, Indiana

I have *Triptogon occidentalis*, *modesta*, *Sphinx chersis*, *Amp. versicolor*, *Catocala relicta* var. *bianca*, *phalanga*, *lacrymosa*, *frederici* and pupæ of *P. astylus* in exchange for others of same genus or for small white roses.—Chas. F. Timm, 131 Ralph St., Brooklyn, N. Y.

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